

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELIZABETH CRONEY AND JAMES CLARK)	
)	
COMPLAINANTS)	
)	
v.)	CASE NO. 94-254
)	
HARRISON COUNTY RURAL ELECTRIC)	
COOPERATIVE CORPORATION)	
)	
DEFENDANT)	

O R D E R

On June 30, 1994, Elizabeth Croney and James Clark filed a complaint against Harrison County Rural Electric Cooperative Corporation ("Harrison RECC") alleging that they had been billed for an amount in excess of the electricity that they used for August 1993 through October 1993. The Commission ordered Harrison RECC to respond to the complaint which was done by letter dated October 20, 1994.

During the months prior to the filing of the formal complaint, Commission Staff performed a meter complaint investigation and documented the investigation in a report which is attached hereto and incorporated herein as Attachment A. The Commission, on its own motion, HEREBY ORDERS the Complainants and Harrison RECC to file comments regarding the report within 20 days of the date of this Order. Such comments shall also state whether a public hearing is requested or whether the party is willing for the matter

to be submitted to the Commission for a decision without a public hearing.

Done at Frankfort, Kentucky, this 25th day of January, 1995.

PUBLIC SERVICE COMMISSION


For the Commission

ATTEST:


Executive Director



COMMONWEALTH OF KENTUCKY
PUBLIC SERVICE COMMISSION
730 SCHENKEL LANE
POST OFFICE BOX 615
FRANKFORT, KY. 40602
(502) 564-3940

M E M O R A N D U M

TO: Bob Johnston, Manager
Consumer Services

THROUGH: Claude G. Rhorer, Jr., Director
Engineering and Services

FROM: Denis P. Hildenbrand *DPH*
Utility Investigator Chief
Meter Standards Laboratory

DATE: May 25, 1994

SUBJECT: Meter Complaint Investigation Report
Elizabeth Croney vs. Harrison RECC

Enclosed is the requested Meter Complaint Investigation Report regarding the above complaint for distribution by you to the proper individuals. If you have any questions, please contact me at your convenience.

DPH:jep

Enclosures

Commonwealth of Kentucky
Public Service Commission

Meter Complaint Investigation Report
Complaint #940011102

Elizabeth Croney/James J. Clark vs. Harrison RECC

Brief

On April 26, 1994, various tests were run at the meter test facilities of Harrison Rural Electric Cooperative Corporation ("Harrison RECC") in Cynthiana, Kentucky. This was done in response to a letter received April 8, 1994, at the PSC's Consumer Services offices wherein they sought ". . . to formally request that the PSC evaluate the functioning of our electric meter. . . ." (refer to Attachment "A"). These official Complaint Tests were done in accordance with the directives outlined in the Public Service Commission's Regulations 807 KAR 5:006, Section 18(2) and 807 KAR 5:041, Section 17. At question is an August bill amounting to \$763.27. Refer to Attachments "B", "C", and "D" regarding some of the more detailed history and exact sequence of events for Account No. 0212202501.

The major focus of these tests was to verify the company's most recent test results for this meter. With this thought in mind, utility test records were sought and obtained for this meter. Refer to these results as follows:

Attachment "E": 8-81 -- 100.1 (earliest results for meter)
Attachment "F": 3-89 -- 100.0 (prior to installation in '89)
Attachment "G": 3-94 -- 100.15 (request test results)

The past test record for the meter that is presently in place at the Paris, Kentucky location was likewise sought and obtained and can be seen as follows:

Attachment "H": 1-92 -- 100.0 (new meter results, before installation)

In response to customer inquiries, the questionable meter had been removed from its location by Harrison RECC prior to the 3-94 Request Test.

Observations

The questionable meter involved is a Sangamo Electric Type J4S, form 2S, 240 volt, 30 TA, with a 7.2 Kh, 30 ampere meter, Class 200, 3 wire, Rr 27 2/9, 5 dial digital cyclometer register, 60 cycle, serial no. 43379847, company no. HC 6401, catalog no. 76002 with an observed index reading of 63020 KWH at the start of the testing. The company meter seal "had been broken at the time of the Request Test in the presence of James J. Clark. . . ."

Harrison RECC's meter test benches were used for all tests.

A utility records' check showed that the watthour reference standards located within each bench had indeed been compared to Harrison RECC's Master Watthour Standard as is required in the regulations. Appropriate standard corrections were being applied to the tests where required.

To confirm test bench comparisons, comparison tests were performed between a recently certified PSC watthour standard (certified 3-5-94), serial no. 0006423 (refer to Attachment "I") at the Commission's Meter Standards Laboratory. Overall these results compared very favorably (within $\pm .1$ of 1% at various loads checked). Only after Harrison RECC's test benches were proven to

be quite accurate, using this method, was the decision made to use its test equipment for all remaining checks.

Present for these tests were the following individuals:

- Denis Hildenbrand- PSC Utility Investigator (E0571)
- Larry Jones - Harrison RECC, PSC certified meter tester (E0498)/Member Service Supervisor
- Frankie Taylor - Harrison RECC, PSC certified meter tester (E0014)
- Randall Steele - PSC Laboratory Aide

Since the 3-22-94 Request Test of this questionable meter, the meter had been held under "lock and key" at Harrison RECC awaiting further tests.

"As found" results of the questionable meter were as follows (refer to Attachment "J" for details):

	<u>Full Load</u>	<u>Light Load</u>	<u>.5% Lagging Power Factor</u>
Average of 3 tries = (KM-90)	99.76	99.84	100.12

Overall average of FL and LL (KM-90) = 99.8%

"As found" results of the questionable meter using Harrison RECC alternate test bench TE9 were as follows (refer to Attachment "K"):

	<u>Full Load</u>	<u>Light Load</u>	<u>.5% Lagging Power Factor</u>
Average of 3 tries = (TE 9)	99.7	98.9	99.2

Overall average of FL and LL (Te 9) = 99.3%

Taking into consideration all of the above results, the overall accuracy of this meter was found to be 99.6%.

Once Harrison RECC's earlier test results were confirmed, additional checks were run on this meter to assure that all was proper. The Register Ratio (Rr) of 27 7/9 on the meter name plate was verified to be correct.

The meter was then tested for "creep" (no disk rotation with only voltage applied). None was observed.

No physical evidence of lightning damage was observed to the lightning arresters or any other place on the meter (no burn marks, etc.).

The meter blades were checked for excessive wear. All appeared normal. Likewise, the register "mesh" was found normal. The disk was checked to see if it was warped or bent. All appeared to be proper.

The meter's register was removed and the numbers manually counted in sequence forward and backward watching the proper operation of these odometer numbers. No trouble was found. The register was reinstalled with the reading of 63022 KWH.

This meter was then sealed with "PSC/KY, No. 7/46" lead seal.

The meter was checked with an ohmmeter. No insulation breakdown was detected.

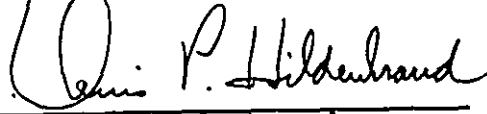
James J. Clark and Elizabeth L. Croney were given the opportunity to be present to witness these tests but declined.

Conclusions

The questionable meter accuracy of the Croney/Clark meter fell within PSC accuracy guidelines of $\pm 2\%$.

This questionable meter is presently being held at the Commission's Meter Standards Laboratory and will remain there until the matter is resolved.

Submitted,

A handwritten signature in cursive script, reading "Denis P. Hildenbrand". The signature is written in dark ink and is positioned above a horizontal line.

Denis P. Hildenbrand
Chief Utility Investigator

DPH:jep

Attachments

JAMES J. CLARK
ELIZABETH L. CRONEY
1681 Georgetown Road
Paris, Kentucky 40361-9726

RECEIVED
APR 08 1994
PSC Consumer Services

Mr. Bob Johnston
Public Service Commission
PO Box 615
Frankfort KY 40602

Dear Mr. Johnston:

The staff person handling our case, Ms. Louise Conway, recommended that we write to you to formally request that the PSC evaluate the functioning of our electric meter. Jim Clark was present when Harrison County Rural Electric Co-op tested the meter and evaluated it as normal.

REQUEST
TEST →

We were told that the next step was for us to write to you.

We are attaching a copy of one of our letters to HCRECC that summarizes the situation. Ms. Conway can also give her perspective.

Sincerely,



James J. Clark - 606/257-2929
Elizabeth Croney - 606/987-0950

CC: Larry Jones, HCRECC
Daniel Sexton, Landlord

1 April 1994

James J. Clark
Elizabeth L. Croney
1681 Georgetown Road
Paris, KY 40361-9726
606-987-8127

Ms. Rita C. Jones
Assistant Supervisor, Member Services
Harrison Rural Electric Co-op Corp.
P.O. Box 130
Cynthiana KY 41031

RE: Acct.# 0212202501

Dear Ms. Jones:

I appreciated the visit made by your field representative last Thursday afternoon in order to determine the sudden "spike" in our electric bill in August. As you know, the August through October 1993 bill stands at \$763.27.

The conclusion, he suggested, was to average the total increase over the three Summer months and then attribute it to air conditioning usage. He also said that there was an adjustment to our bill that might have been responsible for us incurring greater expense later in the Summer. While this seemed reasonable during our visit, my wife later pointed out that over the entire period covering 1992 we paid a total of \$781.57.

Since we have not made any radical change in our electric usage in 1993, we are still at a loss as to why the bill is so high.

We would appreciate getting in writing HRECC's explanation for the increase in our bill, taking into account the above facts.

As always, we have appreciated your courteous and fair approach to this matter. I hope we can come to some workable conclusion.

Sincerely,



Jim Clark (work) 257-2929
Liz Croney (work) 987-0950

5 November 1993

Harrison
Rural Electric Cooperative Corporation

P.O. Box 130
Cynthiana, Kentucky 41031
606/234-3131

January 27, 1994

Elizabeth Croney
1681 Georgetown Pk.
Paris, Ky. 40361

Re: Acct. No. 021-22-025-01

Dear Ms. Croney,

After much research of your last twelve month billing, we have found the problem.

If you will notice on the enclosed "History of Consumption" we got a field reading in June (which would be May usage) of 44860. This resulted in an adjustment of 2110 KWH. We credited your account for \$141.38. This reading of 44860 was not questioned because it had been estimated 2 months prior to this field reading.

Looking further into this matter, we pulled all the payment stubs we had received from you since Dec. 1992. I have enclosed copies of these for you also. If you will notice the reading you submitted with your March payment was 45509. We did not receive this payment until April 2, 1993, of which we were unable to use your reading. Our men got a field reading of 44722, which generated a bill of \$62.84 with 689 KWH. This bill was sent to you in April, we did not receive payment until May 6. The reading on the April card you paid in May was 46405. We were unable to use this reading and the bill was estimated at 45233, which is 1172 KWH than you marked your card. The bill you received in May for 54.04 had a reading from you of 47201. We did not receive the payment until June 1, 1993, therefor the meter reading was estimated again. It was estimated at 46870, which is 331KWH less than you marked and had actually used.

With two estimated readings we sent out for a field reading in June. As you can see the reading our serviceman turned in was less than your last 2 months readings.

We must acknowledge there has been an honest mistake made. The mistake was transposing the field reading of 48460 to 44860. This is where the problem began. An adjustment was made, due to a bad field reading, the only thing that can and will happen is that

you will be billed for any usage that has not been billed for the previous months.

We did not receive a payment for July, nor did we receive a reading. Again the bill was estimated for 46061.

In August we received a payment of 83.23 along with a reading of 53076. This is the reading that generated the 7015 KWH.

Taking June, July, and August usage and dividing by three months, you used an average of 2772 KWH per month,

Since the air conditioning season has passed the bills have averaged approximately 1300 KWH. Due to the readings and field readings tying in each month since August, this shows the billing to be correct.

We cannot stress how important it is to read your meter each month, and read it at the same time every month. If you cannot pay your bill before the end of the month, please send or call in your reading before the 25th of each month.

By doing this in the future, we can avoid a problem such as this arising.

If you need to make a payment agreement on the past due amount, we will be glad to work this out for you.

If we can be of further assistance, feel free to call us at 1-800-842-7481.

Thanks,



Larry R. Jones
Member Services Supervisor

LJ/rj

Harrison
Rural Electric Cooperative Corporation

P.O. Box 130
Cynthiana, Kentucky 41031
606/234-3131

January 5, 1994

Louise Conway
Public Service Commission
730 Schenkel Lane
Frankfort, Ky. 40602

RECEIVED

JAN 7 1994

PSC Consumer Services

RE: Elizabeth Croney account
1681 Georgetown Road
Paris, Ky. 40361-9726

Acct No.# 021-22-025-01

Dear Mrs. Conway,

Enclosed are copies of all correspondence we 've
had with Ms. Croney.

I have highlighted the code which shows that the
bills are estimated very often.

If you have any questions, please call myself or
Larry Jones at 1-800-842-7481.

Sincerely,

Rita C. Jones

Rita C. Jones
Member Services
Asst. Supervisor

Harrison

Rural Electric Cooperative Corporation

P.O. Box 130
Cynthiana, Kentucky 41031
606/234-3131

*mailed
11/11/93*

November 11, 1993

Elizabeth Croney
1681 Georgetown Rd.
Paris, Ky. 40361-9726

Dear Ms. Croney & Mr. Clark,

Enclosed please find a copy of the expanded history of your account. As you will notice, I have highlighted every month the KWH usage, the amount of bill, and also highlighted is the code for the reading, If it is a "3" it is estimated, if it is a "0" it has been consumer read.

I hope this helps you to understand your billing. If you have any further questions, feel free to call me.

If you will, please call me or stop by the office, and we will work out a payment agreement that will be both agreeable to you and for us also.

Sincerely,

Rita L. Jones

Rita C. Jones
Member Services
Asst. Supervisor

O= MEMBER READ

* In 7 months there were 5 estimates made, Harrison states
"that the meter was misread, causing the wrong
bill adjustment to have been made, hence the
catch up bill that resulted amounting to \$763.21."

Billing											
-----Who Read-----Reading-----Reading-----Reading-----Reading-----Reading-----Reading-----Reading-----Reading-----Reading-----Reading-----											
Date	Month	Day	Reading	Reading	Reading	Reading	Reading	Reading	Reading	Reading	Reading
10/29/90	Sep	0	17047	0	10/17/90	1753	118.71	.79	.00	0	.00
11/27/90	Oct	30	18351	3	10/17/90	1304	89.91	.78	.00	0	.00
12/28/90	Nov	60	19523	3	10/17/90	1172	81.44	.33	.00	0	.00
01/29/91	Dec	90	19478	0	01/08/91	45CR	3.31	.01	.00	0	.00
02/26/91	Jan	30	20837	3	01/08/91	1409	96.65	.10	.00	0	.00
03/23/91	Feb	60	21555	0	03/20/91	668	49.17	.12	.00	0	.00
04/29/91	Mar	60	21346	3	03/20/91	778	56.17	.20	.00	0	.00
05/26/91	Apr	60	23111	3	03/20/91	778	56.17	.10	.00	0	.00
06/26/91	May	60	23740	6	06/17/91	629	47.81	.44	.00	0	.00
07/27/91	Jun	0	24751	0	07/10/91	1211	84.65	.70	.00	0	.00
08/27/91	Jul	0	26420	0	08/13/91	1469	101.35	.66	.00	0	.00
09/27/91	Aug	0	26871	6	09/18/91	451	35.45	.15	.00	0	.00
10/27/91	Sep	30	28624	3	09/18/91	1753	119.73	1.12	.00	0	.00
11/27/91	Oct	60	29928	3	09/18/91	1304	90.67	1.59	.00	0	.00
12/27/91	Nov	90	31100	3	09/18/91	1172	82.12	.97	.00	0	.00
01/28/92	Dec	120	30834	6	01/15/92	266CR	10.89	.16	.00	0	.00
02/26/92	Jan	30	32243	3	01/15/92	1409	97.46	1.52	.00	0	.00
03/27/92	Feb	60	32911	3	01/15/92	668	49.50	.87	.00	0	.00
04/28/92	Mar	90	33422	6	04/07/92	511	39.41	.70	.00	0	.00

19-70

METER TEST - A.C.
Harrison County R.E.C.C.
Cynthiana, Kentucky

C.O. No.

Mtr. No.

Class

Route

Location

Reason

Time Arr.

Left

Mans	Dist. R.	Dist. M.	Condition	Found	Left	Remarks
Type	Dist. R.	Dist. M.	Reaping	12 12	22 12	10
Ampl.	Dist. R.	Dist. M.	Seal M.	10 10	10 10	
Volls	Dist. R.	Dist. M.	Seal Box			
Wire	Dist. R.	Dist. M.	Register			
Phase	Dist. R.	Dist. M.	Jewel			
Cycles	Dist. R.	Dist. M.	Pivot			
C.T. Ratio			Top Gear			
P.T. Ratio			Starts	1 35	2 05	
C.T. No.			Cross	10	10	
C.T. No.			Pat. Coll.			
C.T. No.			Magnets			
P.T. No.			Sec. Gnd.			
P.T. No.						
P.T. No.						

Quantum
Meter/Results
in 1981

TEST AS FOUND

Load	Met. R.	Observed Sig. Rev.	Avg. R.	True R.	Obs. N. Rev.	Sig. Corr.	Trans. Corr.	True N. Rev.	Avg. N. Rev.
Light	1	100	100	100	100	100	100	100	100
Normal	100	100	100	100	100	100	100	100	100
Full	100	100	100	100	100	100	100	100	100
S.P.P.	100	100	100	100	100	100	100	100	100

TEST AS LEFT

Light									
Normal									
Full									
S.P.P.									

TEST AS FOUND

Elem.	M.R.	Sig. R.	True R.	Obs. N. Rev.	Sig. Corr.	Trans. Corr.	True N. Rev.	M.R.	Sig. R.	True R.	Obs. N. Rev.	Sig. Corr.	Trans. Corr.	True N. Rev.
L														
M														
R														
L														
M														
R														
L														
M														
R														

DATE 8/12/81

ASSISTANT

Quantum
Meter/Results
1981

Attachment "G"

METER TEST - A. C.
Harrison County R.E.C.C.
Cynthiana, Kentucky

C.O. No. HC-6401
Mr. No. 4.3 379 847
Class 200 Route
Location SHOP
Reason Office Regal
Time Arr. Left

Make	<u>SAKS</u>	Dial K	<u>X1</u>	Condition	Found	Left	<u>OK</u>	Remarks
Type	<u>TOS</u>	Disk K	<u>71</u>	Reading	<u>63019</u>	<u>63019</u>		
Amps.	<u>30</u>	Test K	<u>2</u>	Seal M	<u>HV10</u>	<u>HV16</u>		
Volts	<u>240</u>	Reg. R	<u>245</u>	Seal Box				
Wire	<u>3</u>	Gear R	<u>245</u>	Register				
Phase	<u>1</u>	Std. No.		Jewel	<u>1</u>	<u>1</u>		
Cycles	<u>60</u>			Pivot				
C.T. Ratio				Top Bear.				
P.T. Ratio				Starts	<u>105</u>	<u>105</u>		
C.T. No.				Creeps	<u>100</u>	<u>100</u>		
C.T. No.				Pot. Coll				
C.T. No.				Magnets	<u>1</u>	<u>1</u>		
P.T. No.				Sec. Gnd.				
P.T. No.								

QUESTIONABLE
METER. =
REQUEST
TEST
3-22-94

(Jim
Clark
witnessed
test)

HM90
used

TEST AS FOUND

Series	Load	Met. R.	Observed Std. Revs.	Ave. R.	True R.	Obsvd. % Reg.	Std. Corr.	Trans. Corr.	True % Reg.	Ave. % Reg.
	Light	<u>1</u>				<u>100.25</u>				
	Normal									<u>100.15</u>
	Full	<u>1</u>				<u>100.03</u>				
	.5 P.F.					<u>100.0</u>				

TEST AS LEFT

Series	Load	Met. R.	Observed Std. Revs.	Ave. R.	True R.	Obsvd. % Reg.	Std. Corr.	Trans. Corr.	True % Reg.	Ave. % Reg.
	Light									
	Normal									
	Full									
	.5 P.F.									

TEST AS FOUND

Elem.	M.R.	Std. R.	True R.	Obsvd. % Reg.	Std. Corr.	Trans. Corr.	True % Reg.	M.R.	Std. R.	True R.	Obsvd. % Reg.	Std. Corr.	Trans. Corr.	True % Reg.
Light														
M														
R														
Full														
M														
R														
.5 P.F.														
L														
M														
R														

DATE 3-22-94TESTER Jim ClarkREGISTRAR Jim Clark

QUALITY METER LAB

JAN 7 1992
DATE

O. NO. 11 057

Reading	Found 00000	Left 00000	Mfr. No. 88 009 293
Class	200	AS FOUND	
Make	S	LOAD	Mfr Rev Std Rev % Reg Average
Type	J55	LIGHT	1 21.58 100.1
Amps.	30	FULL	5 108.16 99.9
Volts	240	Std	
Wire	3	AS LEFT	
Phase	1	LOAD	Mfr Rev Std Rev % Reg Average
Dial K	1	LIGHT	1 21.58 100.1
Disk K	7.2	FULL	5 108.16 99.9
Reg. R	27.7	Std	5 107.74 100.2

LAB ☒ FIELD ☐

P C R

KW TEST RESULTS

Type Reg.	Found	Left	KW Scale	KW Constant	KW Reading
Current Transformers			Potential Transformers		
No.	Type	Ratio	No.	Type	Ratio

Tested by
DmC SavageTEST RECORD
OF
METER
PRESENTLY IN
PLACENew
meter - tested
1-7-92 at
Quality Meter Lab

Certification

This is to certify that this Watt-hour Meter Standard has been tested by the Public Service Commission of Kentucky.

Make Scientific Columbus Serial No. 0006423

Type SC10
Volts 120/240/ Amps 1/5/12.5/ Kh 6 Hz 60
480 50

Classification Master Standard

Status Approved

Utility Public Service Commission

Tested with Known Comparator / 3 SC60's averaged

Certified by *Don Hildebrand*

Date 3-5-94 Expires 3-5-95

CALIBRATION DATA										
Current Coil	Current	120 Volts			240 Volts			480 Volts		
		Kh.	P.F.	% Reg.	Kh.	P.F.	% Reg.	Kh.	P.F.	% Reg.
1.0	.25	1.0	99.97		1.0	99.98				
1.0	.50	1.0	99.98		1.0	100.00				
1.0	1.0	1.0	100.01		1.0	100.02				
1.0	1.5	1.0	100.02		1.0	100.04				
5.0	1.25	1.0	99.97		1.0	99.98				
5.0	2.5	1.0	99.97		1.0	99.99				
5.0	2.5	0.5	100.02		0.5	100.05				
5.0	3.0	1.0	99.98		1.0	99.99				
5.0	3.0	0.5	100.00		0.5	100.03				
5.0	5.0	1.0	100.00		1.0	100.02		1.0	100.04	
5.0	5.0	0.5	99.96		0.5	99.98		0.5	100.00	
5.0	7.5	1.0	100.02		1.0	100.04				
5.0	10.0	1.0	100.02		1.0	100.05				
5.0	10.0	0.5	99.91		0.5	99.93				
12.5	12.5	1.0	99.98		1.0	100.01				
12.5	12.5	0.5	99.93		0.5	99.95				
12.5	15.0	1.0	99.99		1.0	100.01				
12.5	15.0	0.5	99.92		0.5	99.94				
12.5	25.0	1.0	99.98		1.0	100.01				
12.5	25.0	0.5	99.86		0.5	99.90				
50.0	30.0	1.0	99.98		1.0	99.99				
50.0	30.0	0.5	99.99		0.5	100.01				
50.0	50.0	1.0	99.98		1.0	100.00				
50.0	50.0	0.5	99.96		0.5	99.98				

Attachment "J"

METER TEST - A. C.
Harrison County R.E.C.C.
Cynthiana, Kentucky

KM-90

C.O. No. HC-6501
Mfr. No. 43379847
Class 200 Route
Location SHOP
Reason Office Reg
Time Arr. Left

Make	SAHS	Dial K	X1	Condition	Found	Left	CYC	Remarks
Type	T K5	Disk K	7.2	Reading	63022	63022		
Amps.	30	Test K	4	Seal M	HV6	HV6		
Volts	240	Reg. R	273	Seal Box				
Wire	7	Gear R		Register	/	/		
Phase	70	Sid. No.		Jewel	/	/		
Cycles	60			Pivot				
C.T. Ratio				Top Gear.				
P.T. Ratio				Starts	VDS	X-09		
C.T. No.				Creeps	40	20		
C.T. No.				Pol. Coll	/	/		
C.T. No.				Magnets	/	/		
P.T. No.				Sec. Gnd.				
P.T. No.								

KM 90 bench used -

TEST AS FOUND

KM-90

Series	Load	Mel. R.	Observed	Std. Revs.	Ave. R.	True R.	Obsvd. % Reg.	Std. Corr.	Trans. Corr.	True % Reg.	Ave. % Reg.
	Light	120	99.88	99.90	99.74	99.84					
	Normal		580	1400	Rev						
	Full	1	99.77	99.73	99.71	99.76					99.80
	.5 P.F.	1	100.10	100.11	100.16	100.12					

TEST AS LEFT

4.5

Series	Load	Mel. R.	Observed	Std. Revs.	Ave. R.	True R.	Obsvd. % Reg.	Std. Corr.	Trans. Corr.	True % Reg.	Ave. % Reg.
	Light										
	Normal										
	Full										
	.5 P.F.										

TEST AS FOUND

TEST AS LEFT

Elem.	M.R.	Std. R.	True R.	Obsvd. % Reg.	Std. Corr.	Trans. Corr.	True % Reg.	M.R.	Std. R.	True R.	Obsvd. % Reg.	Std. Corr.	Trans. Corr.	True % Reg.
Light	L													
	M													
	R													
Full	L													
	M													
	R													
.5 P.F.	L													
	M													
	R													

DATE

TESTER

ASSISTANT

4337984

Don H. Haddock